

CLAIMS

What is claimed is:

1. A non-aqueous electrolyte rechargeable battery,  
comprising:
  - 5 an element for electromotive force including a positive electrode and a negative electrode;
  - a battery case for accommodating the element for electromotive force therein; and
  - a switch element attached to the battery case and
- 10 interposed in a circuit for connecting the battery to an external power source, the switch element being operable in response to a change in temperature of the battery, thereby disconnecting the battery from the circuit and establishing a short circuit across the positive electrode and the negative electrode, the switch element being capable of restoring to its initial state in response to a change in temperature of the battery.

2. The non-aqueous electrolyte rechargeable battery  
20 according to Claim 1, wherein the switch element includes
  - a temperature-sensitive element;
  - a first conductive plate connected to one of the positive electrode and the negative electrode and disposed on one side of the temperature-sensitive element; and
- 25 a second conductive plate connected to the other one of the positive electrode and the negative electrode disposed on

the other side of the temperature-sensitive element opposite from the first conductive plate, wherein

the temperature-sensitive element is in contact with either one of the first conductive plate and the second 5 conductive plate, and deforms to contact the other one of the first conductive plate and the second conductive plate in response to a change in temperature of the battery.

3. The non-aqueous electrolyte rechargeable battery

10 according to Claim 2 wherein the temperature-sensitive element is made of shape-memory alloy.

4. A non-aqueous electrolyte rechargeable battery comprising:

15 an element for electromotive force including an electrode of first polarity and an electrode of second polarity;

a battery case having an open top end for accommodating the element for electromotive force, and being electrically connected to the electrode of first polarity; and

20 a closure assembly for closing the open top end of the battery case, including an external terminal, an internal terminal electrically connected to the electrode of second polarity, a switch element in electrical contact with both of the external terminal and the internal terminal, and a ring- 25 like conductive element electrically connected to the battery

case and electrically insulated from both of the external terminal and the internal terminal, wherein

the switch element disconnects itself from the external terminal and makes electrical contact with the ring-like

5 conductive element in response to a change in temperature of the battery, thereby breaking electrical connection between the battery and an external power source and establishing a short circuit to cause the battery to discharge, and wherein the switch element restores to its initial state in response

10 to a change in temperature of the battery, thereby re-establishing electrical connection between the battery and the external power source.

5. The non-aqueous electrolyte rechargeable battery

15 according to Claim 4, wherein the electrical insulation between the ring-like conductive element and the external terminal and the internal terminal is effected by a ring-like gasket disposed on an inner peripheral side of the ring-like conductive element, the external terminal and the internal

20 terminal being arranged on an inner side of the ring-like gasket, the ring-like conductive element having an inwardly extending protrusion passing through a hole formed in the ring-like gasket towards between the external terminal and the internal terminal.

6. The non-aqueous electrolyte rechargeable battery according to Claim 5, wherein the switch element makes contact with the protrusion of the ring-like conductive element to form the short circuit.

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7. The non-aqueous electrolyte rechargeable battery according to Claim 6 wherein the switch element is made of a shape-memory alloy.